

No. 5. — *Zoological Results  
of a Fifth Expedition to East Africa*

V

*Chilopoda (Myriopoda)*

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INTRODUCTION

The material dealt with in this paper consists not only of the Chilopoda collected by Arthur Loveridge during his expedition to Nyasaland (1948-1949)<sup>1</sup> but includes the bulk of the material collected during his earlier visits to Equatorial East Africa at various times during the years 1915-1939. The dates of these expeditions are as follows:

- 1915-1919. "German East Africa" and Mozambique.
- 1920-1923. Kenya Colony and Tanganyika Territory.
- 1926-1927. Chiefly the Uluguru and Usambara Mountains, Tanganyika.
- 1929-1930. Tanganyika Territory; Northern Rhodesia and Uganda.
- 1933-1934. Debasien Mountain, Uganda to the coastlands of Kenya.
- 1938-1939. Uganda; eastern Belgian Congo; coastlands of Tanganyika.
- 1948-1949. Nyasaland and near Tete, Zambezi River, Mozambique.

The 1915-1919 collections were submitted to the late Mr. Stanley Hirst at the British Museum in 1920, and remained there until 1924. Mr. Hirst identified the centipedes only, and as he could hold out no hopes of the millipedes being determined, they were taken to the United States in 1924.

These earlier collections, together with the 1926-1927 material, were shipped in 1927 to Dr. Carl in Switzerland, where they remained for five years without any identifications as to species having been

<sup>1</sup> Made possible by a generous grant from the Penrose Fund of the American Philosophical Society.

made. At the end of that time they were returned to the Museum of Comparative Zoology. Dr. Carl wrote that the Polydesmoidea were the only group he had had time to study; some of these he had named generically, and there were undoubtedly new genera and species in the collection.

In the course of their trans-Atlantic voyages the Juliformia and Polydesmoidea suffered considerable fragmentation, but upon their return they, together with the 1929-1930 collections, were submitted to Dr. O. F. Cook in Washington. There they remained until 1948 when Dr. Cook's successor, Dr. E. A. Chapin, very kindly named most of the centipedes and personally brought the 1929-1930 collections back to Cambridge.

It has not been possible to include all the Chilopoda collected during the first five months of the Nyasaland expedition in 1948, as these have been temporarily mislaid and must be in one of the departments of the Museum of Comparative Zoology.

The recent monographs by Attems on the Geophilomorpha and Scolopendromorpha (1929 and 1930, *Das Tierreich*, Lief. 52 and 54), have given systematists a good working knowledge of the two larger groups of Chilopoda. According to these studies about 35 species of Scolopendromorpha and 10 of Geophilomorpha are known from the region under consideration. Comparing the area in which the collections were made with another African region of approximately equal size, Southern Africa, Attems has listed 46 species of Scolopendromorpha and 27 of Geophilomorpha from this region in his monograph of the South African Myriopod fauna (1928, *Ann. S. Afr. Mus.*, 26).

It thus seems probable that, even if allowance is made for the South African subregion having been more systematically explored for Myriopoda than tropical East Africa, a supposition of which we can by no means be certain, the fauna of tropical East Africa is not as rich as that of South Africa. In the case of the Geophilomorpha at any rate this seems to be very probable.

Four species of Scolopendromorpha — *Scolopendra morsitans*, *Trachycormocephalus afer*, *Alipes grandidieri*, *Ethmostigmus trigonopodus* — and one of the Geophilomorpha, *Mecistocephalus insularis*, form a substantial proportion of the collection in numbers of individuals; all these species have a wide range and are found at all altitudes. In the southern region of Africa on the other hand the widely distributed species are fewer in number; there are more localised

forms and a more varied fauna.

The larger forms of centipedes are well represented in the collection. The total number of species recorded or described as new would undoubtedly have been greater, especially among the centipedes of smaller size, such as the genus *Cryptops*, had not a number of these more fragile specimens lost important structures, making it impossible to find sufficient characters for their determination. These smaller and more delicate forms suffer to a greater extent from the effects of travel and from packing and repacking, than do the larger and more robust centipedes.

The collection of Chilopoda dealt with in this paper consists of 288 individuals, not including a large number of the young stages of the wing-footed centipede, *Alipes grandidicri*. It comprises 21 species and subspecies divided among 12 genera; all the four suborders of Chilopoda are represented, but all the species, with two exceptions, are referable to the suborders Scolopendromorpha and Geophilomorpha.

Four forms are described as new; these are:

*Cormocephalus multispinus quadridens* subsp. nov.

*Cryptops loveridgei* sp. nov.

*Cryptops kivuensis* sp. nov.

*Orphnaeus validus* sp. nov.

In addition to these new forms the undermentioned species or subspecies are recorded for the first time from the respective countries in which they were collected:

NEW FOR UGANDA

*Cormocephalus büttneri*

*Rhysida stuhlmanni*

NEW FOR KENYA COLONY

*Rhysida nuda togoensis*

NEW FOR TANGANYIKA TERRITORY

*Cormocephalus nitidus nitidus*

*Ostotigmus cuneiventris*

*Rhysida intermedia*

*Rhysida afra afra*

NEW FOR NYASALAND

*Cormocephalus humilis*

The following abbreviations have been employed in the listing of material:

- B. C. = Belgian Congo  
 K. C. = Kenya Colony  
 M. = Mozambique  
 N. = Nyasaland  
 N. R. = Northern Rhodesia  
 T. T. = Tanganyika Territory  
 U. = Uganda

### SYSTEMATIC DISCUSSION

#### Suborder SCUTIGEROMORPHA

##### SCUTIGERA COLEOPTRATA Linnaeus

♂. Madarazi, Uluguru Mtns., T.T. 22.x.23.

#### Suborder LITHOBIOMORPHA

##### LITHOBIUS ALLUAUDI Brölemann

*Lithobius alluaudi* Brölemann, 1924, Bull. Soc. Sci. Nat. Maroc, 4, p. 188: Morocco.

♀ ♀. Tangier, Morocco. 4.x.38.

Two incomplete and rather badly contracted specimens are attributed with some doubt to this species.

#### Suborder SCOLOPENDROMORPHA

##### SCOLOPENDRA MORSITANS Linnaeus

*Scolopendra morsitans* Linnaeus, 1758, Syst. Nat., ed. 10, p. 638.

- 1.<sup>1</sup> Gongoni, 70 feet, coast of K.C. 27.vi.34.
8. Dar es Salaam, 42 feet, T.T. 1.ii.19; 6.xi.26; xi.29.
1. Bagamoyo, 100 feet, T.T. 18.xi.29.
4. Morogoro, 1628 feet, T.T. xi.16; v-x.17.
5. Mangasini, 4000 feet, Usandawi, T.T. 13.xii.29.
3. Kasumbadedza, 250 feet, Zambezi River, M. i.49.

##### SCOLOPENDRA CANIDENS ORANIENSIS Lucas

*Scolopendra oraniensis* H. Lucas, 1846, Rev. Zool., 9, p. 287.

1. Tangier, Morocco. 4.x.38.

<sup>1</sup> Number of specimens collected.

## TRACHYCORMOCEPHALUS AFER (Meinert)

*Cormocephalus afer* Meinert, 1886, Proc. Amer. Phil. Soc., **23**, p. 205.

6. Amaler River, 5000 feet, Debasien Mtn., U. xi.33.
2. Greeki River, 3000 feet, Karamoja, U. 11.xii.33.
1. Elgonyi, 7000 feet, Elgon Mtn., U. 20.i.34.
1. Tsavo, 1525 feet, Tsavo River, K.C. 6.iv.34.
8. Mbololo Mtn., 4800 feet, Uteita, K.C. 16.iv.34.
1. Voi, 1833 feet, Coast Province, K.C. iv.34.
2. Mtongwe, 50 feet, opp. Kiliudini, K.C. 6.vii.48.
10. Longido Mtn. west foot, 2000 feet, T.T. 1.ii.16.
1. Mangasini, 4000 feet, Usandawi, T.T. 13.xii.29.
2. Amani, 3000 feet, Usambara Mtns., T.T. xi.26.
2. Siga Caves, 50 feet, near Tanga, T.T. vi.39.
1. Dar es Salaam, 42 feet, T.T. 11.xi.26.
24. Morogoro, 1628 feet, T.T. 1.xi.16-1.ii.18.
2. Mbanja, 400 feet, near Lindi, T.T. iv.39.

*T. afer* is one of the commonest of the larger centipedes in the collection. It is remarkable that not a single example of the other species known to occur in East Africa, *T. mirabilis*, was taken at any of the collecting stations. *T. afer* is easily distinguishable from *T. mirabilis* in having only the last tergite emarginate and in the first 5 or 6 antennal segments being hairless. These characters are very definite in all the specimens examined, and those in the collection previously diagnosed as *mirabilis* by Dr. E. A. Chapin, must be referred to *afer*.

## CORMOCEPHALUS BÜTTNERI Kraepelin

*Cormocephalus büttneri* Kraepelin, 1903, Mitt. Mus. Hamburg, **20**, p. 193.

2. Idjwi Id., 6500 feet, Lake Kivu, B.C. ii.39.
4. Lichenya Plateau, 6000 feet, Mlanje Mtn., N. 9-21.viii.48.
3. Ruo River, 3000 feet, Mlanje Mtn., N. 4.iv.49.

This species closely resembles *Trachycormocephalus afer*, with which it shares a number of characters, but differs in the complete absence of tarsal spurs.

## CORMOCEPHALUS HUMILIS Attems

*Cormocephalus humilis* Attems, 1928, Zool. Anz., **78**, p. 294, figs. 10-12.

2. Lichenya Plateau, 6000 feet, Mlanje Mtn., N. 9-21.viii.48.
1. Chiradzulu Mtn., 3900 feet, N. 26.viii.48.
1. Kausi Village, 1400 feet, Lake Malombe, N. 25.ii.49.

## CORMOCEPHALUS NITIDUS NITIDUS Porat

*Cormocephalus nitidus* Porat, 1872, Ofr. Ak. Forh., **23**, p. 1154.

3. Magrotto Mtn., 2500 feet, near Tanga, T.T. vii.39.

These specimens only differ from the typical form in having lateral emarginations present on the last tergite alone.

## CORMOCEPHALUS MULTISPINUS QUADRIDENS subsp. nov.

## Figure 1

*Type.* M.C.Z. A single adult from Chikwawa, Shire River at 120 feet, Nyasaland; collected by Arthur Loveridge, April 18, 1949.

*Diagnosis.* The single specimen differs very little from the typical form which is widely distributed in the eastern half of South Africa (Lawrence, 1947, Ann. Natal Mus., **11**, p. 139), but is distinguished from it mainly in having only 4 spiniform teeth on the coxopleural process, instead of 5 or 6.

*Description.* Longitudinal furrows of the head only distinct in the posterior two-fifths of the segment. Last sternite twice as long as wide or nearly so (Fig. 1). Process of coxopleura on each side with 4 small spines forming a compact group at its apex. Porose area of coxopleura clearly defined, rounded distally and reaching exactly as far as the posterior margin of the last sternite. End-legs longer and more slender than in the typical form but with about the same number of small spines on the prefemur; these spines of very uniform size. Distal tarsal segment of end-legs sparsely covered with fine short hairs. Remaining characters corresponding with those of *Cormocephalus multispinus multispinus* Kraepelin.

*Color.* In alcohol yellow with a reddish tinge.

*Size.* Total length of body, 41 mm. This does not include the end-legs which are much contracted.

## OTOSTIGMUS CUNEIVENTRIS Porat

*Otostigmus cuneiventris* Porat, 1893, Bih. Svensk. Akad., **18**, p. 10.

1. Amani, 3000 feet, Usambara Mtns., T.T. xi.26.

## ALIPES GRANDIDIERI (Lucas)

*Eucorybas grandidieri* H. Lucas, 1864, Ann. Soc. ent. France (4), **4**, p. 420.

1. Ngatana, 300 feet, Tana River, K.C. vi.34.

- 1. Mangasini, 4000 feet, Usandawi, T.T. 13.xii.29.
- 38. Amani, 3000 feet, Usambara Mtns., T.T. xi.26.
- 1. Magrotto Mtn., 2500 feet, near Tanga, T.T. vii.39.
- 1. Siga Caves, 50 feet, near Tanga, T.T. vi.39.
- 1. Tanga, 50 feet, coast of T.T. 3.xi.29.
- 1. Morogoro, 1628 feet, T.T. I.xi.16.
- 1. Nchingidi, 2700 feet, Rondo Plateau, T.T. v.39.

The collection includes a number of developmental stages; accompanying two Amani females are two batches of eggs and four post-natal development stages. If the batches, which number 70 and 103 respectively, represent two layings, then the number produced by this

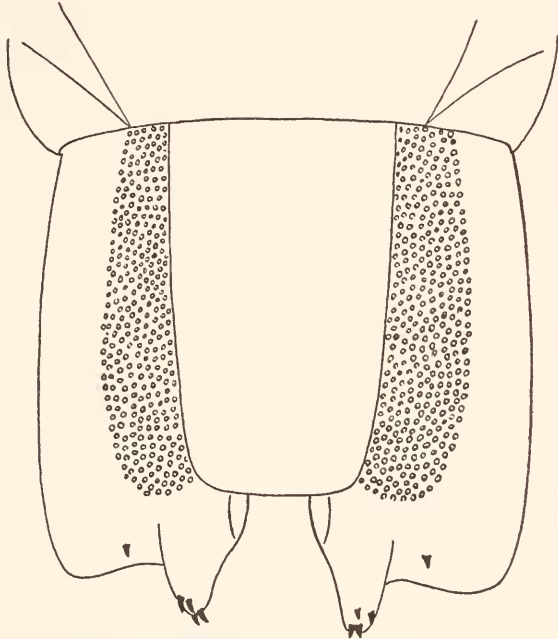


Fig. 1. *Cormocephalus multispinus quadridens* sp. nov. Sternite and coxopleuræ of the last segment viewed from below.

species appears to be greater than is usual in the Scolopendromorpha. It is certainly more than the highest number (40) deposited by the somewhat smaller *Cormocephalus multispinus* in Southern Africa, and that (33) recorded for *Scolopendra dalmatica* in Europe.

The earliest development stage consists of 19 embryos and corresponds very closely with that described and figured as the first

embryonic stage of the Natal centipede *Cormocephalus multispinus* (Lawrence, 1947, Ann. Natal Mus., 11, p. 142, text-figs. 1 A, A').

The three further stages collected by Loveridge represent various periods of the adolescent phase in which the bodies of the young resemble the adults in miniature but are extended and not flexed in a horse-shoe, so that they are able to perform active movements.

*Stage I* of this phase is represented by a batch of 57 individuals. It is what Heymons calls "the foetal stage," and has been described for *Alipes multicostis* by Verhoeff (1925, in Bronn Klass. Ord. Tierreich, Chilopoda, 5, (2), p. 182, pl. xiv, figs. 3-8) with whose description the specimens before me correspond fairly well. The adolescents are 21-23 mm. in body length, including the end-legs; the antennae have 17 entirely hairless segments, the ocelli invisible. Body segments with faint traces of the longitudinal keels only on the posterior tergites; stigmata rudimentary, with minute openings; mouthparts not chitinised, weak claws present on the legs but spines and spurs absent. End-legs unmodified, closely resembling Verhoeff's figure 3 (*loc. cit.*), the tibial and tarsal segments somewhat flattened and distinctly wider than the preceding ones.

*Stage II* of the adolescent phase is represented by a batch of 37 individuals whose bodies measure from 28-32 mm. in total length. In this stage, which is a marked advance on the previous one, all the structures found in the adult are present in miniature. The keels of the tergites, ocelli, tarsal and claw spurs are present as in the adult; antennae, except the two basal segments, with dense fine hairs; stigmata well developed, with chitinous peritremes, mouthparts well chitinised. The end-legs in this stage show all the modifications found in the adult forms, though much smaller.

Another batch of 8 individuals may represent a still further stage but in size and structure does not differ from the preceding. In colour, however, these are noticeably darker, being described by Loveridge as "violet-coloured brown," whereas specimens in the previous stage are only slightly pigmented. The largest adult female accompanying these juveniles measures 120 mm. in total length, the end-legs included.

#### ALIPES MULTICOSTIS INTERMEDIUS Attems

*Alipes multicostis intermedius* Attems, 1911, Revue Suisse Zool., 19, p. 272.

1. Mubango, 4000 feet, Mabira Forest, U. 10.xi.38.
15. Kibale Forest, 4000 feet, U. xii.38.
4. Idjwi Id., 6500 feet, Lake Kivu, B.C. ii.39.



## ETHMOSTIGMUS TRIGONOPODUS (Leach)

*Scolopendra trigonopodus* Leach, 1817, Zool. Misc., **3**, p. 36.

9. Lamu, 50 feet, Lamu Island, K.C. v.34.
1. Mombosasa, 100 feet, near Witu, K.C. v.34.
1. Gongoni, 50 feet, coast of K.C. 27.vi.34.
2. Kilindini, 50 feet, Mombasa Id., K.C. 25.vii.39.
2. Tsavo, 1525 feet, Tsavo River, K.C. 6.iv.34.
9. Voi, 1833 feet, Coast Province, K.C. iv.34.
3. Mbuyuni, 3500 feet, K.C. 13.v.16.
3. Moshi, 2700 feet, T.T. iii.16.
1. Longido Mtn. west foot, 2000 ft., T.T. 1.ii.16.
3. Mangasini, 4000 feet, Usandawi, T.T. 13.xii.29.
1. Kikuyu, 3900 feet, Dodoma, T.T. 21.xii.29.
1. Madarazi, Uluguru Mtns., T.T. 22.x.26.
5. Morogoro, 1628 feet, T.T. i-v.17 & 7.ii.18.
2. Siga Caves, 50 feet, near Tanga, T.T. vi.39.
12. Dar es Salaam, 42 feet, T.T. 6-9.xi.26.
8. Mbanja, 400 feet, near Lindi, T.T. iv.39.
2. Mikindani, 20 feet, coast of T.T. 23.iii.39.
1. Tanganyika Territory without further data.
3. Kausi Village, 1400 feet, Lake Malombe, N. 25.ii.49.

## RHYSIDA NUDA TOGOENSIS Kraepelin

*Rhysida togoensis* Kraepelin, 1903, Mitt. Mus. Hamburg, **20**, p. 145, figs. 84-85.

14. Ngatana, 300 feet, Tana River, K.C. vi.34.

## RHYSIDA STUHLMANNI Kraepelin

*Rhysida stuhlmanni* Kraepelin, 1903, Mitt. Mus. Hamburg, **20**, p. 152, fig. 97.

1. Morogoro, 1628 feet, T.T. 1.ii.18.
3. Kitaya, 300 feet, Ruvuma River, T.T. iii.39.
1. Ruo River, 3000 feet, Mlanje Mtn., N. 4.iv.49.

## RHYSIDA INTERMEDIA Attems

*Rhysida intermedia* Attems, 1910, in Voeltzkow, Reise in Ostafrika, **3**, p. 83.

2. Lutindi Mtn., 4000 feet, Usambara Mtns., T.T. 12.xii.26.
1. Nyange, 2500 feet, Uluguru Mtns., T.T. 11.x.26.
4. Vituri, 2000 feet, Uluguru Mtns., T.T. 30.x.26.

## RHYSIDA AFRA AFRA (Peters)

*Ptychotrema atrum* Peters, 1855, Monatsber. Akad. Wiss. Berlin, p. 82.

2. Amani, 3000 feet, Usambara Mtns., T.T. xi.26.

## CRYPTOPS LOVERIDGEI sp. nov.

## Figure 2

*Type.* M.C.Z. Holotype from Mbanja, 400 feet, near Lindi, Tanganyika Territory; collected by Arthur Loveridge, April, 1939.

*Paratypes.* Three further specimens with the same data as the type.

*Diagnosis.* This species agrees in all particulars with *C. aloysii sabaudiae* Silv. except in the structure of the porose area and the dentition of the end-legs.

*Description.* Resembling *C. aloysii sabaudiae* in the characters of the body segments and head; sternites fairly thickly and regularly covered

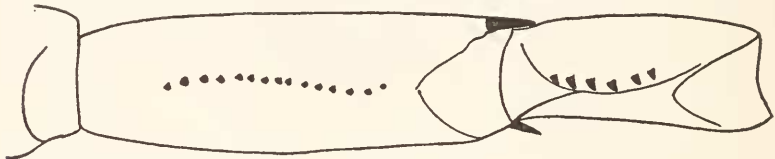


Fig. 2. *Cryptops loveridgei* sp. nov. Tibia and first tarsus of the end-leg viewed from below.

with minute granules, more so in the posterior ones, giving them a shagreened appearance. Porose area thickly covered with numerous pores, reaching well beyond the posterior margin of the last sternite; the posterior border of the coxopleura with a few spines. Prefemur of end-legs with numerous black spine-like hairs below and at the sides, femur with similar but fewer spines; prefemur with a medial apical tooth, femur with a lateral apical tooth, tibia with an apical tooth both laterally and medially, all these very distinct. Tibia with a row of 12-14 minute serrate denticles below, arranged in a slightly sigmoid curve, first tarsus with 5-6 serrate teeth distinctly larger than those of the tibia (Fig. 2).

*Color.* Reddish yellow to reddish brown.

*Size.* Body length of largest specimen 50 mm., of smallest 42 mm. Width of largest specimen 2.5 mm.

*Remarks.* This is an unusually large species. The specimens on which Silvestri's description of *C. aloysii sabaudiae* was based seem to have been unusually small (12 mm. in length), even for a species of *Cryptops*, and may have been immature. The fact that the specimens

described above agree remarkably well with Silvestri's species, except in the characters of the porose area and end-legs, point to the possibility of their being the same species of which the types of *C. aloysii sabaudiae* are immature forms.

CRYPTOPS KIVUENSIS sp. nov.

*Type.* M.C.Z. A single specimen from Idjwi Island, 6500 feet, Lake Kivu, Belgian Congo; collected by Arthur Loveridge, February, 1939.

*Diagnosis.* This species agrees most closely with *C. stupendus* Attems, but differs in the dentition of the end-legs and other characters.

*Description.* Headplate with very faint longitudinal furrows in its posterior two-fifths. Anterior margin of coxa of toxicognaths with 3 or 4 long bristles. Complete longitudinal furrows from the fourth or fifth tergite onwards, lateral furrows from about the fifth tergite. Last tergite forming a fairly sharp angle in the middle posteriorly. Sternites with cross furrows, the longitudinal ones definitely longer than the transverse ones. Legs well provided with strong setae, those on the thirteenth pair to the end-legs strong and spine-like, especially on the prefemur and femur, where they form irregular rows. Prefemur of end-legs with an apical dorso-medial spine, femur with a dorso-lateral spine, tibia with small apical spines on both sides. Tibia below with a sinuous row of about 13 denticles, tarsus with 5 larger saw-like teeth, decreasing progressively in size distally.

*Size.* Total length about 33 mm.

Suborder GEOPHILOMORPHA  
MECISTOCEPHALUS INSULARIS (Lucas)

*Geophilus insularis* H. Lucas, 1863, in Maillard, Note Réunion, ed. 2, pl. xvi. fig. 1.

3. Amaler River, 5000 feet, Debasien Mtn., U. xi.33.
1. Entebbe, 3800 feet, Lake Victoria, U. 28.vi.30.
2. Mubuku Valley, 6800 feet, Ruwenzori Mtns., U. 31.xii.38.
1. Ngatana, 300 feet, Tana River, K.C. vi.34.
1. Lutindi Mtn., 4000 feet, Usambara Mtns., T.T. 13.xii.26.
1. Amani, 3000 feet, Usambara Mtns., T.T. xi.26.
2. Kilosa, 1640 feet, Usagara, T.T. 31.i.21.
1. Kibakwe, Ugogo, T.T. 10.ii.23.
1. Mukwese, Manyoni, T.T. 5.vii.26.

2. Matipa Ridge, 6000 feet, Misuku Mtns., N. 27.ix.48.
2. Nyika Plateau, 7000 feet, N. xi.48.
2. Nchisi Mtn., 5000 feet, N. xii.48.

ORPHNAEUS VALIDUS sp. nov.

Figure 3.

*Cotypes.* M.C.Z. Three specimens from Kibakwe, Ugogo, Tanganyika Territory; collected by Arthur Loveridge, February 10, 1923.

2. Voi, 1833 feet, K.C. 10.iv.34.
3. Longido Mtn. west foot, 1628 feet, T.T. 1.ii.16.
1. Mangasini, 4000 feet, Usandawi, T.T. 14.xii.29.

*Diagnosis.* The material which can be allocated to this species comes from four localities and agrees in the following characters. Tarsus of end-legs 7-jointed, the last segment without claw. Stigma pleurite and prescutellum distinctly separated by a deep suture. First maxilla as in figure 3B, claw of second maxilla fringed with stout blunt spines along its ventral edge as in figure 3A. One to three rows of paratergites (see below under "*Remarks*"). Gonopods two-jointed. Mandibles with 4 or 5 dentate lamellae carrying 8-13 teeth. No frontal suture (*Stirnfurche*) on the headplate anteriorly. Antennae short, reaching to about the base of the toxicognaths. The form differs from any other species of *Orphnaeus* at least in its far greater size, and except in the case of *O. mexicanus*, in the larger number of legs.

*Description.* Headplate distinctly wider than long, slightly produced in the middle anteriorly, forming a blunt and very wide angle; almost smooth, with a few minute well separated pits. Antennae short, not reaching the posterior margin of the first leg-bearing segment, the joints smooth and shiny but from the sixth onwards with very fine short hairs.

Tergites without hairs, from the fifteenth backwards with minute leather-like corrugations and asperities laterally to the median impression, but the lateral margin of each tergite smooth and shiny; the median impressions very strong, especially in the middle and posterior half of the body, the middle furrow much narrower and shallower than the lateral ones but still very distinct. Sternites smooth and shiny, in some specimens (? a sexual character) with a median longitudinal furrow in the posterior segments, sternite of end-legs twice as wide as long, its posterior margin straight.

Pores of the anterior sternites arranged in two groups, that along

the posterior margin much stronger than the anterior group and extending right across the segment or almost so; the anterior group much smaller, occupying a lens-shaped area in the middle of the sternite, thinning out on each side and not reaching the sides; in the

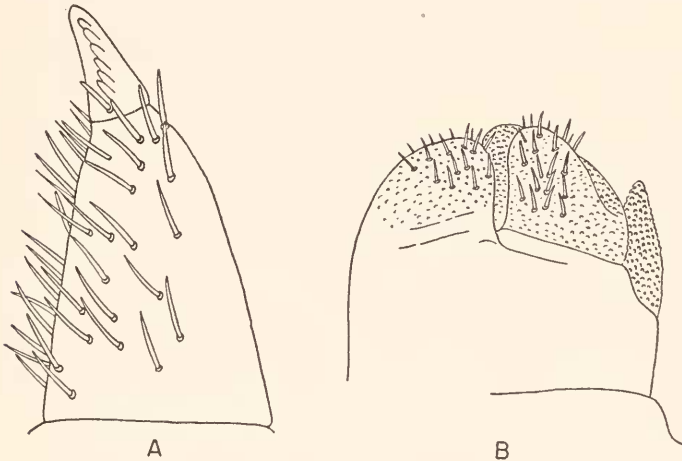


Fig. 3. *Orphnaeus validus* sp. nov. A, second maxilla, terminal segment and claw of the telepodite; B, left half of first maxilla.

eightieth sternite both groups are divided, the anterior ones being very small, the posterior ones composed of numerous pores in a large oval area clearly separated by a smooth gap; they continue this way to the end of the body, the posterior areas becoming smaller and approaching each other again posteriorly, the anterior ones almost evanescent.

*Color.* Body yellow, headplate, toxicognaths and anterior segments slightly more reddish but not contrasting with the remaining segments; the median impressions from about the fortieth tergite giving the impression of a narrow darker band with a greenish tinge, continued to the posterior end of the body.

*Size.* The measurements, which are approximate but probably conservative, of the nine specimens are given together with the number of pairs of legs in the following table.

<i>Localities roughly S. to N.</i>	<i>Total length</i>	<i>Number of legs</i>
Kibakwe	135 mm.	127 pairs
"	118 "	124 "
"	110 "	125 "
Longido	95 "	115 "
"	88 "	106 "
"	87 "	117 "
Mangasini	117 "	127 "
Voi	88 "	127 "
"	74 "	114 "

*Remarks.* The characterisation of the genera of the family Oryidae seems to rest upon insecure foundations in at least one respect, the number of rows of paratergites. In the types from Kibakwe one specimen had none, in the two others from the same tube one had three distinct rows in the middle of the body, the other had none anteriorly, one in the middle and two in the posterior part of the body.

In the two specimens from Longido Mountain, one had three rows of paratergites, the other only one; in the example from Mangasini there is one row on most segments but occasionally two; in the specimens from Voi one had three rows, the other one or two rows. The number of rows of paratergites visible seems to depend on the condition of the specimen; all those that were well distended had three rows; in flattened or somewhat shrunken examples the rows are fewer in proportion to the amount of shrinkage.

All the specimens listed above are either larger or have more pairs of legs than either *O. brevilabiatus* or *O. meruinus* recorded from tropical East Africa, while the arrangement of its pores seems to indicate that *validus* is more closely related to *meruinus* than to *brevilabiatus*.

*Habits.* On the label accompanying the Mangasini cotype, Loveridge notes that it is a luminescent form. Verhoeff (1925, in Bronn, Klass. Ord. Tierreich, Chilopoda, 5, (2), p. 310) lists *O. brevilabiatus* as the only African geophilid known to possess light-producing capacities. It appears probable all the species of this widespread genus, being well provided with ventral pores, are light-producing forms.

#### Material specifically undeterminable

The undermentioned geophilids are probably referable to *Orphnacus*, but are now too old to be specifically identifiable.

2. Morogoro, 1628 feet, T.T. 1.x.17 & 4.ii.18.
1. Mpwapwa, 3315 feet, Ugogo, T.T. 23.xi.29.

While the following scolopendrids are represented by immature forms, or have lost essential diagnostic structures.

*Cormocephalus*

1. Nyamkolo, 2700 feet, Lake Tanganyika, N.R. 7.v.30.

*Ostostigmus*

1. Mpwapwa, 3315 feet, Ugogo, T.T. 23.xi.29.

*Alipes*

1. Entebbe, 3800 feet, Lake Victoria, U. 27.vi.30.

*Rhysida*

1. Magrotto Mtn., 2500 feet, near Tanga, T.T. vii.39.
1. Vituri, 1628 feet, Uluguru Mtns., T.T. 30.x.26.

*Cryptops*

2. Amaler River, 5000 feet, Debasien Mtn., U. xi.33.
1. Ngatana, 300 feet, Tana River. K.C. vi.33.
1. Kausi Village, 1400 feet, Lake Malombe, N. 25.ii.49.